

HYDRIC SOIL INTERPRETATIONS  
HYDRIC SOILS LIST  
Logan County, North Dakota

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed. The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 1995). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (USDA, 1999) and "Keys to Soil Taxonomy" (USDA, 1998) and in the "Soil Survey Manual" (USDA, 1993).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 1996).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units in the Hydric Soil Interpretations table meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 1996).

Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

These map units, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
30: AMOR-ARNEGARD LOAMS, 0 TO 3 PERCENT SLOPES	AMOR	No	rise	---	---	---	---
	ARNEGARD	No	alluvial flat, swale	---	---	---	---
40: AMOR-WERNER-FARNUF LOAMS, 6 TO 9 PERCENT SLOPES	AMOR	No	knoll, ridge	---	---	---	---
	WERNER FARNUF	No No	knoll, ridge flat, terrace	--- ---	--- ---	--- ---	--- ---
41: AMOR-WERNER LOAMS, 9 TO 15 PERCENT SLOPES	AMOR	No	ridge	---	---	---	---
	WERNER	No	ridge	---	---	---	---
76: ARVILLA SANDY LOAM, 0 TO 6 PERCENT SLOPES	ARVILLA	No	rise	---	---	---	---
118: BARNES-BUSE LOAMS, 3 TO 6 PERCENT SLOPES	BARNES	No	knoll, moraine	---	---	---	---
	BUSE	No	moraine, ridge	---	---	---	---
156: BARNES-SVEA LOAMS, 3 TO 6 PERCENT SLOPES	BARNES	No	rise	---	---	---	---
	SVEA	No	swale	---	---	---	---
313: BUSE-BARNES LOAMS, 6 TO 9 PERCENT SLOPES	BUSE	No	moraine, knoll, ridge	---	---	---	---
	BARNES	No	knoll, moraine	---	---	---	---
314: BUSE-BARNES LOAMS, 9 TO 15 PERCENT SLOPES	BUSE	No	knoll, moraine, ridge	---	---	---	---
	BARNES	No	knoll, moraine	---	---	---	---
319: BUSE-BARNES LOAMS, 15 TO 35 PERCENT SLOPES	BUSE	No	knoll, moraine, ridge	---	---	---	---
	BARNES	No	knoll, moraine, ridge	---	---	---	---
450: COLVIN SILT LOAM	COLVIN	Yes	drainageway, flat, lake plain	2B3	YES	NO	NO
511: DIVIDE LOAM, 0 TO 3 PERCENT SLOPES	DIVIDE	No	flat, outwash plain, terrace	---	---	---	---
674: FARNUF LOAM, 0 TO 2 PERCENT SLOPES	FARNUF	No	flat, terrace	---	---	---	---
712: FLAXTON-WILLIAMS COMPLEX, 1 TO 6 PERCENT SLOPES	FLAXTON	No	flat, rise	---	---	---	---
	WILLIAMS	No	rise	---	---	---	---
714: FLAXTON-WILLIAMS COMPLEX, 6 TO 9 PERCENT SLOPES	FLAXTON	No	swale	---	---	---	---
	WILLIAMS	No	rise	---	---	---	---

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
727: FORDVILLE LOAM, 0 TO 3 PERCENT SLOPES	FORDVILLE	No	flat	---	---	---	---
863: HAMERLY LOAM, 0 TO 3 PERCENT SLOPES	HAMERLY	No	flat, till plain	---	---	---	---
883: HAMERLY-TONKA-PARNELL COMPLEX, 0 TO 3 PERCENT SLOPES	HAMERLY	No	flat, till plain	---	---	---	---
	TONKA PARNELL	Yes Yes	depression depression	3,2B3 2B3,3	YES YES	NO NO	YES YES
1011: KARLSRUHE COARSE SANDY LOAM	KARLSRUHE	No	flat	---	---	---	---
1181: LOHNES LOAMY COARSE SAND, 0 TO 6 PERCENT SLOPES	LOHNES	No	rise	---	---	---	---
1202: MADDOCK LOAMY FINE SAND, 0 TO 6 PERCENT SLOPES	MADDOCK	No	rise	---	---	---	---
1249: APPAM SANDY LOAM, 0 TO 6 PERCENT SLOPES	APPAM	No	outwash plain, rise	---	---	---	---
1267: MARYSLAND LOAM	MARYSLAND	Yes	drainageway, flat, outwash plain	2B3	YES	NO	NO
1372: NOONAN-WILLIAMS LOAMS, 1 TO 6 PERCENT SLOPES	NOONAN	No	swale	---	---	---	---
	WILLIAMS	No	rise	---	---	---	---
1374: NUTLEY SILTY CLAY, 0 TO 3 PERCENT SLOPES	NUTLEY	No	flat, lake plain	---	---	---	---
1375: NUTLEY SILTY CLAY, 3 TO 6 PERCENT SLOPES	NUTLEY	No	lake plain, rise	---	---	---	---
1427: PARNELL SILTY CLAY LOAM	PARNELL	Yes	depression, moraine	2B3,3	YES	NO	YES
1437: PARSHALL FINE SANDY LOAM, 0 TO 3 PERCENT SLOPES	PARSHALL	No	flat, terrace	---	---	---	---
1466: PITS, GRAVEL AND SAND	PITS, GRAVEL AND SAND	No	---	---	---	---	---
1676: WILDROSE SILTY CLAY	WILDROSE	No	flat, lake plain	---	---	---	---
1697: SIOUX-ARVILLA COMPLEX, 0 TO 6 PERCENT SLOPES	SIOUX	No	rise	---	---	---	---
	ARVILLA	No	rise	---	---	---	---
1710: SOUTHAM SILTY CLAY LOAM	SOUTHAM	Yes	depression, lake plain, till plain	2B3,3	YES	NO	YES
1762: SVEA-BARNES LOAMS, 0 TO 3 PERCENT SLOPES	SVEA	No	swale	---	---	---	---
	BARNES	No	rise	---	---	---	---

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
1805: TELFER LOAMY FINE SAND, 0 TO 6 PERCENT SLOPES	TELFER	No	lake plain, rise	---	---	---	---
1886: HAMERLY AND VALLERS LOAMS, SALINE, 0 TO 3 PERCENT SLOPES	VALLERS	Yes	flat, till plain	2B3	YES	NO	NO
	HAMERLY	No	flat	---	---	---	---
1898: VEBAR FINE SANDY LOAM, 0 TO 6 PERCENT SLOPES	VEBAR	No	rise	---	---	---	---
1978: WATER	WATER	Yes	depression	2B3,3	YES	NO	YES
2006: WILLIAMS LOAM, 6 TO 9 PERCENT SLOPES	WILLIAMS	No	knoll, till plain	---	---	---	---
2014: WILLIAMS-BOWBELLS LOAMS, 0 TO 3 PERCENT SLOPES	WILLIAMS	No	rise	---	---	---	---
	BOWBELLS	No	swale	---	---	---	---
2015: WILLIAMS-BOWBELLS LOAMS, 3 TO 6 PERCENT SLOPES	WILLIAMS	No	rise	---	---	---	---
	BOWBELLS	No	swale, till plain	---	---	---	---
2031: WILLIAMS-ZAHL LOAMS, 3 TO 6 PERCENT SLOPES	WILLIAMS	No	knoll, moraine, ridge	---	---	---	---
	ZAHL	No	knoll, moraine, ridge	---	---	---	---
2037: WILLIAMS-ZAHL-PARNELL COMPLEX, 0 TO 15 PERCENT SLOPES	WILLIAMS	No	knoll, moraine, ridge	---	---	---	---
	ZAHL	No	knoll, moraine, ridge	---	---	---	---
	PARNELL	Yes	depression, moraine	2B3,3	YES	NO	YES
2073: ZAHL-MAX LOAMS, 15 TO 45 PERCENT SLOPES	ZAHL	No	moraine, ridge	---	---	---	---
	MAX	No	knoll, moraine, ridge	---	---	---	---
2081: ZAHL-WILLIAMS LOAMS, 9 TO 15 PERCENT SLOPES	ZAHL	No	knoll, moraine, ridge	---	---	---	---
	WILLIAMS	No	knoll, moraine, ridge	---	---	---	---
2175: ZAHL-WILLIAMS LOAMS, 6 TO 9 PERCENT SLOPES	ZAHL	No	knoll, moraine, ridge	---	---	---	---
	WILLIAMS	No	knoll, moraine, ridge	---	---	---	---

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
2188: WABEK-LEHR COMPLEX, 1 TO 6 PERCENT SLOPES	WABEK	No	collapsed outwash plain, outwash plain, ridge	---	---	---	---
	LEHR	No	collapsed outwash plain, outwash plain, rise	---	---	---	---
2234: AMOR-WERNER LOAMS, 3 TO 6 PERCENT SLOPES	AMOR	No	knoll	---	---	---	---
	WERNER	No	knoll, ridge	---	---	---	---
2235: ARNEGARD LOAM, 0 TO 6 PERCENT SLOPES	ARNEGARD	No	terrace, swale	---	---	---	---
2240: BOWDLE-LEHR LOAMS, 0 TO 3 PERCENT SLOPES	BOWDLE	No	flat, terrace	---	---	---	---
	LEHR	No	rise, terrace	---	---	---	---
2241: BRYANT LOAM, 0 TO 6 PERCENT SLOPES	BRYANT	No	lake plain, rise	---	---	---	---
2242: COHAGEN-VEBAR-PARSHALL FINE SANDY LOAMS, 15 TO 50 PERCENT SLOPES	COHAGEN	No	ridge	---	---	---	---
	VEBAR	No	ridge	---	---	---	---
	PARSHALL	No	swale	---	---	---	---
2243: VEBAR-FLASHER COMPLEX, 9 TO 15 PERCENT SLOPES	VEBAR	No	ridge	---	---	---	---
	FLASHER	No	ridge	---	---	---	---
2244: DAGLUM-BELFIELD LOAMS, 0 TO 2 PERCENT SLOPES	DAGLUM	No	swale, terrace	---	---	---	---
	BELFIELD	No	rise, terrace	---	---	---	---
2246: GRAIL SILTY CLAY LOAM, 0 TO 6 PERCENT SLOPES	GRAIL	No	flat, swale	---	---	---	---
2248: LEHR-BOWDLE LOAMS, 3 TO 6 PERCENT SLOPES	LEHR	No	rise, terrace	---	---	---	---
	BOWDLE	No	swale, terrace	---	---	---	---
2249: MAKOTI SILTY CLAY LOAM, 0 TO 3 PERCENT SLOPES	MAKOTI	No	flat	---	---	---	---
2250: MAKOTI-RUSKLYN SILTY CLAY LOAMS, 3 TO 6 PERCENT SLOPES	MAKOTI	No	swale	---	---	---	---
	RUSKLYN	No	rise	---	---	---	---
2252: MAX-ZAHL-ARNEGARD LOAMS, 9 TO 35 PERCENT SLOPES, VERY STONY	ZAHL	No	knoll, moraine, ridge	---	---	---	---
	MAX	No	knoll, moraine, ridge	---	---	---	---
	ARNEGARD	No	moraine, swale	---	---	---	---

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				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
2253: MONDAMIN SILTY CLAY, 1 TO 6 PERCENT SLOPES	MONDAMIN	No	rise	---	---	---	---
2254: OVERLY SILTY CLAY LOAM, 0 TO 3 PERCENT SLOPES	OVERLY	No	flat	---	---	---	---
2255: OVERLY-RUSKLYN SILTY CLAY LOAMS, 3 TO 6 PERCENT SLOPES	OVERLY	No	swale	---	---	---	---
	RUSKLYN	No	rise	---	---	---	---
2257: REEDER-ARNEGARD LOAMS, 3 TO 6 PERCENT SLOPES	REEDER	No	rise	---	---	---	---
	ARNEGARD	No	swale	---	---	---	---
2258: REGENT-SAVAGE SILTY CLAY LOAMS, 0 TO 6 PERCENT SLOPES	REGENT	No	rise	---	---	---	---
	SAVAGE	No	flat	---	---	---	---
2259: RHOADES-DAGLUM LOAMS, 3 TO 9 PERCENT SLOPES	RHOADES	No	knoll, swale	---	---	---	---
	DAGLUM	No	knoll, rise	---	---	---	---
2260: RUSKLYN SILTY CLAY LOAM, 1 TO 6 PERCENT SLOPES	RUSKLYN	No	lake plain, rise	---	---	---	---
2261: SCHALLER LOAMY SAND, 0 TO 6 PERCENT SLOPES	SCHALLER	No	escarpment, rise	---	---	---	---
2262: SCHALLER LOAMY SAND, 6 TO 15 PERCENT SLOPES	SCHALLER	No	esker, ridge	---	---	---	---
2263: SINAI SILTY CLAY	SINAI	No	flat	---	---	---	---
2264: VEBAR-COHAGEN FINE SANDY LOAMS, 6 TO 9 PERCENT SLOPES	VEBAR	No	knoll, ridge	---	---	---	---
	COHAGEN	No	knoll, ridge	---	---	---	---
2265: WABEK-APPAM SANDY LOAMS, 0 TO 6 PERCENT SLOPES	WABEK	No	ridge	---	---	---	---
	APPAM	No	swale	---	---	---	---
2266: WABEK-APPAM SANDY LOAMS, 6 TO 25 PERCENT SLOPES	WABEK	No	escarpment, ridge	---	---	---	---
	APPAM	No	swale	---	---	---	---
2267: WERNER-AMOR-ARNEGARD LOAMS, 15 TO 50 PERCENT SLOPES	WERNER	No	knoll, ridge	---	---	---	---
	AMOR	No	knoll, ridge	---	---	---	---
	ARNEGARD	No	swale	---	---	---	---
2269: CAVOUR-BARNES LOAMS, 1 TO 6 PERCENT SLOPES	CAVOUR	No	swale	---	---	---	---
	BARNES	No	rise	---	---	---	---

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2270: HARRIET AND STIRUM SOILS	HARRIET	Yes	flat, flood plain	2B3	YES	NO	NO
	STIRUM	Yes	depression, flood plain	2B3	YES	NO	NO
2271: LOHNES LOAMY COARSE SAND, 6 TO 15 PERCENT SLOPES	LOHNES	No	ridge	---	---	---	---
2272: SIOUX-ARVILLA COMPLEX, 6 TO 25 PERCENT SLOPES	SIOUX	No	ridge	---	---	---	---
	ARVILLA	No	rise	---	---	---	---
2273: SVEA-BUSE-PARNELL COMPLEX, 0 TO 15 PERCENT SLOPES	SVEA	No	moraine, swale	---	---	---	---
	BUSE	No	knoll, moraine, ridge	---	---	---	---
	PARNELL	Yes	depression, moraine	3, 2B3	YES	NO	YES
2274: TOWNER-MADDOCK COMPLEX, 3 TO 6 PERCENT SLOPES	TOWNER	No	rise	---	---	---	---
	MADDOCK	No	swale	---	---	---	---
2275: TOWNER-MADDOCK-BUSE COMPLEX, 6 TO 15 PERCENT SLOPES	TOWNER	No	ridge	---	---	---	---
	MADDOCK BUSE	No No	ridge ridge	--- ---	--- ---	--- ---	--- ---

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				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria

FOOTNOTE: There may be small areas of included soils or miscellaneous areas that are significant to use and management of the soil; yet are too small to delineate on the soil map at the map's original scale. These may be designated as spot symbols and are defined in the published Soil Survey Report or the USDA-NRCS Technical Guide, Part II. Areas mapped as water or any map unit that contains one of the following conventional symbols is considered a hydric soil map unit: marshes or swamps; wet spots; depressions; streams, lakes and ponds.

1. All Histosols except Folists, or
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Aquisalids, Pachic subgroups, or Cumulic subgroups that are:
  - a. Somewhat poorly drained with a water table equal to 0.0 foot (ft) from the surface during the growing season, or
  - b. poorly drained or very poorly drained and have either:
    - (1) water table equal to 0.0 ft during the growing season if textures are coarse sand, sand, or fine sand in all layers within 20 inches (in),  
or for other soils
    - (2) water table at less than or equal to 0.5 ft from the surface during the growing season if permeability is equal to or greater than 6.0 in/hour (h) in all layers within 20 in, or
    - (3) water table at less than or equal to 1.0 ft from the surface during the growing season if permeability is less than 6.0 in/h in any layer within 20 in, or
3. Soils that are frequently ponded for long duration or very long duration during the growing season, or
4. Soils that are frequently flooded for long duration or very long duration during the growing season.



